DOCUMENT RESUME

ED 023 470 PS 001 275

By-Minuchin, Patricia

Processes of Curiosity and Exploration in Preschool Disadvantaged Children.

Bank Street Coll. of Education, New York, N.Y.
Spons Agency-Office of Economic Opportunity, Washington, D.C.
Report No-OEO-2403
Pub Date Jun 68
Note-59p.
EDRS Price MF-$0.50 HC-$3.05
Descriptors-*Behavior Patterns, Cognitive Development, Concept Formation, *Culturally Disadvantaged, *Curiosity, Low Achievement Factors, Measurement Techniques, *Pilot Projects, *Preschool Children, Self Concept, Spontaneous Behavior, Student Interests
Identifiers-Get Set, *Project Headstart

This study was created primarily to explore new techniques and to generate fruitful new hypotheses and procedures for the (1) description of variations in expressed curiosity and constructive exploration among disadvantaged preschool children and (2) assessment of the relationship between such curiosity and exploration and other aspects of the child's dynamic and cognitive development. The study was conducted at two Philadelphia Get Set (Head Start) preschool centers with eighteen 4-year-old Negro children. Data sources were (1) observations of the children in the preschool setting, (2) teacher rankings, and (3) four sessions with the individual children. During the data gathering, special measures were used to assess the child's curiosity and exploration, self-image, perception of adults and environment, and concept formation. The results showed that although the subjects were not as advanced as middle class children, they did divide into high and low developed groups. Those subjects with more active exploratory behavior were more coherent, had more positive images, and had a more adequate concept formation. These children seem to have a good chance to succeed in school, but the less developed children, who appeared to be very disadvantaged, will need significant amounts of added help. (WD)

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Processes of Curiosity and Exploration in Preschool Disadvantaged Children

by

Patricia Minuchin, Ph.D.

PS001275 ED023470

Final Report
Contract No. OEO-2403
Office of Economic Opportunity

Bank Street College of Education
New York, New York
June, 1968

Acknowlegements

I wish to acknowlege the cooperation and assistance of the Philadelphia Board of Education and the Philadelphia Get Set Program in the conduct of this study. Thanks are due in particular to Miss Frances Becker, Director of Education of Young Children, Philadelphia Board of Education; to Mr. Jeffery Jones, Director of the Philadelphia Get Set Program; to Mr. Thomas Rosica of the Philadelphia Board of Education; and to the teaching staffs of the Get Set Centers in which preliminary and project data were collected: Miss Lieberman, Miss Mucha, Mrs. Sheroka and Mr. Chernock. The latter provided valuable data for the study and were more than tolerant of our presence in the Centers over a period of several months.

Special acknowlegement is made to Mrs. Jean Atkins for her very capable and sensitive functioning as the project's research assistant. I wish also to express thanks to Dr. Herbert Zimiles for his statistical suggestions, Mrs. Doris Wallace for her sustained help with the administrative and technical aspects of the project, Daniel Minuchin for his statistical assistance, and Dr. Salvador Minuchin for his suggestions and his encouragement.

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I. INTRODUCTION AND PROBLEM

This pilot project has had two primary objectives: first, to develop ways of systematically describing variations in expressed curiosity and constructive exploration among preschool, disadvantaged children; and second, to assess the relationship between the extent of such spontaneous exploration and other aspects of the child's development.

Developmental theorists have long held that the young child gains an increasing knowledge and mastery of his world by a process of active exploration.[1] As he manipulates objects, creates change, asks questions, he comes to adapt his actions and ideas to his accumulating experience; by the time he enters school he is usually equipped with rudimentary concepts of how the world operates and is structured. The active exercise of exploration during this preschool period is probably useful to his later school learning in several ways: it gives him a cognitive base of information and learning, it gives him a sense of process and relativism that is probably necessary if he is to enter the world of symbol systems and formal teaching, and it gives him an essential set toward the satisfaction of learning and finding out. If we are to follow the theorists a step further, it is also likely that this process serves the child in other ways, fostering his sense of mastery and his psychological growth as a confident and effective individual.

Recent work and theory concerned with children of disadvantaged families has suggested that neither this process nor the presumed concomitant learnings develop as fully, for many of the children, as they do among middle class children[2] -- either because the "natural" development of curiosity and constructive exploration requires models, guidance and response in a form not readily available to these children, or because it is thwarted by threat and trauma in the environment. Obviously, however, the children who are classed as "socially disadvantaged" and who enter preschool compensatory programs vary considerably in their resources, their behavior and the extent to which their activities are characterized by such spontaneous, active exploration.

In shaping the nature of the project, both the assumption of variation within the lower class population and the growth of knowledge concerning disorganized segments of this population have been important factors. They have accounted for the design, which focuses on variation among disadvantaged preschool children, and for the hypotheses, which derive their rationale from the presumed effects of different

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[1] See especially Erikson (1950); Piaget (1952); Werner (1957); White(1959).

[2] Hunt (1964); Mattick (1965); Pavenstedt, Malone et al (1967); Smilansky (1965).

backgrounds within the lower class on aspects of psychological development.

Variation within the lower class population has not been a prime focus of theory or research, to date. Such writers as Pavenstedt (1965) have drawn attention to contrasting values, life styles and child rearing in different lower class homes and to the "broad range of preparedness" among lower class children, while Borowitz and Hirsch (1968) have systematized a developmental typology for describing differences in psychological maturity among young disadvantaged children. In general, however, research relevant to this population has concentrated on examining the differences between lower class children and those of the middle class.

Variation within this population is of obvious importance, however. If preschool programs are to facilitate individual growth and learning as effectively as possible, they need to be based on understanding of variations in the psychological characteristics of the children and in their spontaneous stance toward what the environment has to offer. Such an understanding may be particularly important for a population of children who tend to be relatively non-verbal. Among these children, the extent of constructive and exploratory interaction with the environment may offer the best clues concerning energy available for new learning.

As a primary objective, then, this project has focused on assessing the stance of preschool disadvantaged children toward exploration of the environment. It has been concerned with developing methods for such assessment suitable to the preschool setting and to the comparative evaluation of children within it; it has also been concerned with preliminary study of the processes through which the curiosity of the children is expressed.

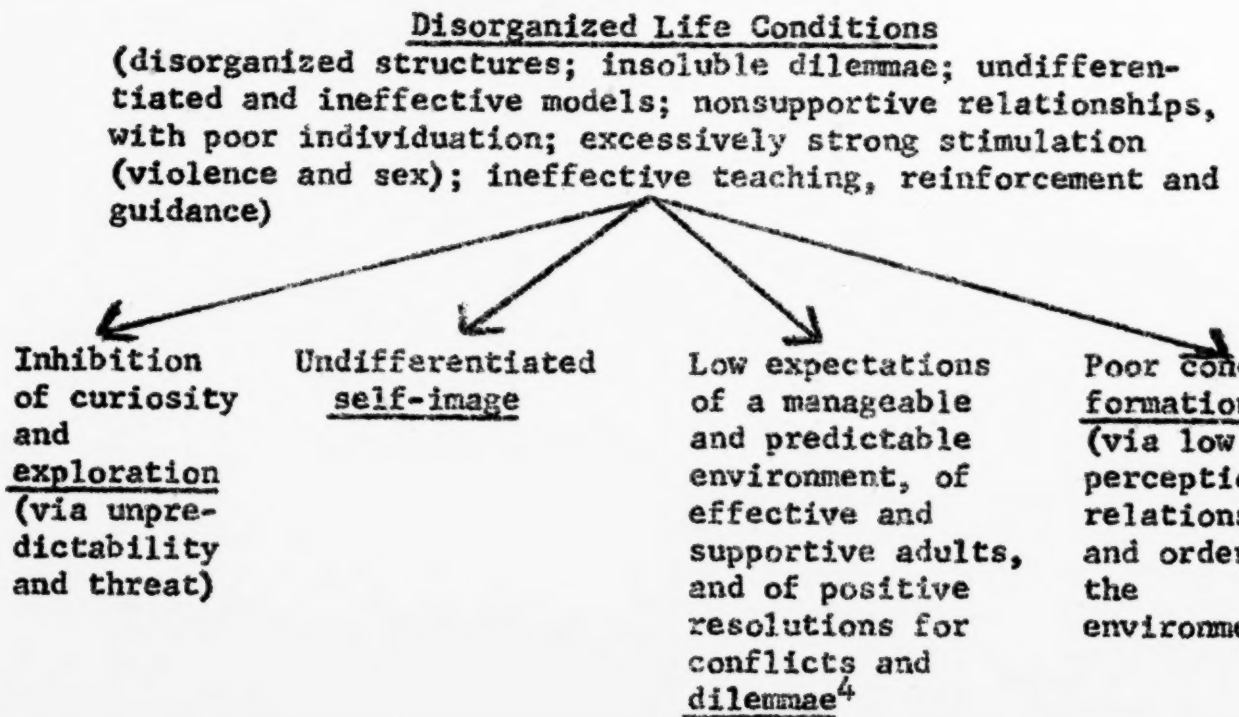
As an extension of its basic purpose, the study has explored the relationship between variations in exploratory behavior and other aspects of dynamic and cognitive development: self-image, expectations of the environment, and concept formation. It was predicted that children with more constructive exploratory behavior would be characterized by a more effective and differentiated self-image; greater expectations of support, coherence and facilitation from the human and physical environment; and greater conceptual mastery. Those with low curiosity and exploration were expected to show a relatively amorphous, undifferentiated self-image; low expectancy of coherence, support or facilitating response from the environment; and relatively inadequate conceptual mastery.

The rationale for these predictions draws in part on new understanding of variations among lower class, urban families and in part on deve-

lopmental theories which posit the interdependence of psychological factors.

Research with inner city disorganized families (Deutsch 1967; Hess and Shipman 1965; Minuchin et al 1967; Pavenstedt, Malone et al 1967) has pointed to certain features that characterize the disorganized segment of the underprivileged population: lack of structure and coherence in the daily environment; ineffective adult models; salience of aggression and threat in the environment; limited gradations of affect and content in communication; low individuation of children; lack of specificity and elaboration in teaching, reinforcement and guidance. Such environments are unpredictable and threatening to the small child and relatively weak in the kinds of models and guidance that presumably enhance optimal development. Theoretically, we might expect multiple effects on the development of children who live within them.[3]

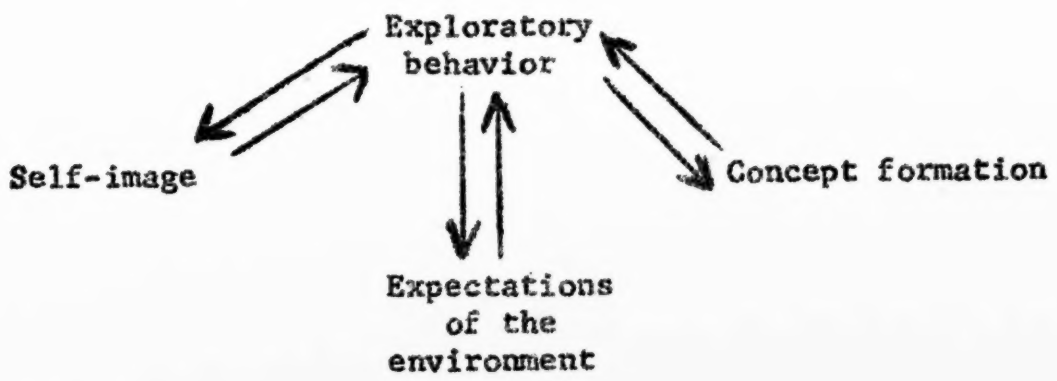
To present this schematically (phrased in terms of the "low" or disorganized end of the continuum):


Disorganized Life Conditions
(disorganized structures; insoluble dilemmae; undifferentiated and ineffective models; nonsupportive relationships, with poor individuation; excessively strong stimulation (violence and sex); ineffective teaching, reinforcement and guidance)
Inhibition of curiosity and exploration (via unpredictability and threat)
Undifferentiated self-image
Low expectations of a manageable and predictable environment, of effective and supportive adults, and of positive resolutions for conflicts and dilemmae
Poor concept formation (via low perception of relationships and order in the environment)

[3] There is, of course, no definite evidence concerning the percentage of children from such homes in the Head Start programs. By definition, these families are not discernible from demographic data, since they share neighborhood, poverty, occupation, educational level etc. with more stable and organized families. In describing this life environment and deriving hypotheses from it, the assumption is made only that Head Start centers tap a range of children, whose poverty-level homes vary from those which fit this description to more organized and growth-supporting situations. This study does not test the relation between

At the same time, the different facets of the child's development are generally conceptualized as affecting each other in circular or interactive fashion. The continuing exercise of spontaneous and exploratory interaction with the environment probably depends in part on certain aspects of personality dynamics -- a growing sense of the self as a differentiated being with power to make an impact on the environment, and an expectation or trust that environmental reactions will be positive rather than painful. Active interaction with the environment, in turn, probably affects these same variables. It is partly through feedback from interaction with the human and physical world that the child develops a concept of self, as distinct from his surroundings, understands his power to make an impact, and forms his image of environmental reactions. Futher, this active interaction with the environment probably brings not only a sense of pleasure and effectiveness but an essential growth in conceptual mastery, based on direct experience with cause and effect, similarities and differences, constancy and change -- a mastery which further stimulates and guides his explorations.

Presented schematically:



However these relationships and factors are conceptualized, they lead to similar predictions: a pattern or syndrome in which the extent of curious and exploratory behavior is associated with the differentiation of self-image, the nature of expectations concerning the human and physical environment, and the level of conceptual mastery.

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family antecedents and child behavior; it tests only the relationship between exploratory behavior and other developmental variables. It has drawn on this theoretical model, however, for clarifying and elucidating its underlying rationale.

[4]This constellation can, of course, be translated into the single psychological variable of higher anxiety, but it seems useful to preserve this more operational description.

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The major variable of this study -- curiosity, or exploratory behavior -- has moved into a position of increasing prominence over the past two decades. While still not a central concept in the psychological field, exploratory behavior has been the subject of a relatively recent rash of interesting studies.[5] Perhaps these have occurred in response to theoretical formulations which brought this kind of behavior to the fore and related it to the general body of psychological theory.[6] It is not the purpose of this report to review the literature in the field. It is of some relevance, however, to note the basic theories and ideas which have been most pertinent to this study.

From formulations in the literature, particularly those of Berlyne (1960; 1965), it seems useful to distinguish two forms of exploratory behavior. Both are relevant to this project and have been considered in the assessments of the children.

The first considers curiosity and exploratory behavior as a response to uncertainty, or to perceived discrepancies between what is experienced and what is expected. This is a matter of conceptual conflict or dissonance. Where new stimuli and environmental events do not "match" the internal expectations or schemata of the individual, he explores the situation, gathering information to resolve the experience of surprise, uncertainty, discrepancy, disequilibrium.

It is in terms of this idea that researchers have set up situations in which simple, familiar stimuli are opposed to more complex and unfamiliar stimuli, or stimuli with incongruous elements. In these situations they have noted the tendency of their subjects to attend to the more unexpected stimuli and to explore those which did not fit established information and expectancies.

The second form of exploratory behavior involves sheer novelty-seeking. This is a form of behavior that has been noted in animal research and that is basic (along with the first form) to Piaget's concepts of the active cycle underlying cognitive growth. It has also been the cornerstone of White's arguments concerning the need for

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[5]See Berlyne (1960; 1965); Charlesworth (1964); Lucco (1965); Maw and Maw (1961; 1964); McReynolds et al (1961); Mendel (1965); Pielstick and Woodruff (1964); Skolnick (1967); Smock and Holt (1962). There are, in addition, a series of studies with animal subjects.

[6]Berlyne (1960; 1965); Fiske and Maddi (1961); White (1959)

revisions in established motivational theory (White, 1959). In this form of curiosity or exploratory behavior, the individual seeks new experience for its own sake. He seeks amusement, diversion, new stimulation -- and his rewards and pleasures lie within the seeking and the experience itself.

In this project, the assumption is made that the natural life environment constantly presents opportunities for exploration in both senses. It can be explored on the basis of sheer novelty-seeking, but it also inevitably presents stimuli that can be perceived as "discrepant" -- that do not fit what one already knows and expects. This is particularly true for young children, for whom the ratio of unknown to known in the environment is bound to be high. And it is particularly true in such settings as the preschool, where it is part of the purpose to stimulate and broaden horizons, presenting new events, objects and activities that are temporarily (and constructively) at variance with what is already known and familiar.

Given this curiosity-inspiring potential in the environment, a low level of reactivity on the part of a child requires explanation. Where it occurs, it may reside in the fact that the child simply does not perceive the "discrepancies" presented by new stimuli -- a lack of perception which may stem partly from the fact that he does not have a stable core of expectations and schemata against which to perceive novelty and "mismatch," and partly from poor capacity for focal attention to ongoing stimulation. Previous work with disadvantaged and disorganized families, noted earlier, has suggested that focal attention among the children of these families is, in fact, limited and that learned expectations are not firm or coherent. These children may have had too little experience with consistent and predictable environments to build an expectation of order and predictability or to *establish firm schemata*. At the same time, they may have had too much experience with the pain and confusion attendant upon exploration, either because they have been directly punished for their efforts or because the young organism has been overwhelmed by unmanageable stimuli (unmediated by adults who modulate the environment in terms of their image of what a young child can take). Such experiences would combine to inhibit the child's perception of the new and noteworthy in his environment and would block what we have considered the natural impulse of a young child to seek new experience and to explore what he finds. One might say colloquially that he does not notice in the first place, and that he would not approach if he did.

In this research on preschool disadvantaged children, the focus has been on variability in the expression of curiosity, with the expectation that some of the children would be restricted in their expression -- perhaps because of the inhibiting factors described above -- while others would be more reactive, seeking and exploratory in their be-

havior. Much research has been concerned with curiosity as a function of the stimulus situation and has tested the properties of objects and stimuli that rouse greater or lesser curiosity among the subjects. In this project, the inherent potential of the environment to offer material for exploration has been assumed -- with some measure of control to keep this constant for all the children. Curiosity has then been defined as a function of the organism's inner organization: the child's perception of opportunities in the environment and his stance toward approaching what is new and interesting.

II. METHOD

Subjects

The study was conducted with four year old Negro children newly entered in Get Set Preschool Programs.[7] It was a primary criterion of the project that the study children be new to the program, since reactions to new situations constituted a major part of the study design, and that there be a sufficient number of such children in the group to permit comparison and differentiation among them. This proved to be a difficult criterion to fulfill; many four year olds in the city's Get Set Program were already veterans of three year old groups. Two Centers were located, however, in which more than half of the four year old group were new. The distribution of study children in these Centers is as follows:

Table 1. Study Subjects

	Girls	Boys	Total
Center A (N 15)*	5	5	10
Center B (N 13)*	4	4	8
			18

*Total number in the group during period of data collection

[7]Get Set Programs, in Philadelphia, are essentially Head Start Programs, serving disadvantaged three and four year olds prior to their entrance into the city's kindergartens.

All but two of the children were between four and four and a half, at the start of data collection; the age range was from 3-9 to 4-8, with a mean of four years, three months. All children in both Centers were Negro.

Qualifications for acceptance into the program set an upper limit to family income, and all children came from "poverty level" homes. Structure and composition of the families varied, however. Five children came from conventionally structured and intact families, with fathers living at home. Two other children came from apparently intact families, but lived with relatives other than their parents during the week, returning to live with their parents on weekends. The remaining 11 children came from families where the father was not present in the home. Many of the children carried the surnames of their mothers, and five of the children lived in extended households, headed by grandparents or grandmother and including the siblings of their mothers as well as any siblings of their own. The number of siblings (defined by a common mother) ranged from one to eight, with a mean of between three and four children. A number of children lived in households, however, where their actual siblings numbered one or two but where they experienced themselves as part of a large family numbering as many as 8-10 children.

Procedures and Techniques

The data collection period covered approximately three months. There were three sources of data: A. Observations in the preschool setting; B. Teacher rankings; C. Individual sessions.[8]

A. Observations in the preschool setting

Observations consisted of narrative records and were of two kinds:

1. Observations of the group in new situations

The observer recorded the reactions of the children to new experiences, activities and events that occurred in the course of the ongoing program. The record was in free narrative form and included the reactions of all the children present, whether study subjects or not.

Events and activities identified as new experiences included: trips to new places (the firehouse; a new playground; a museum; the harbor; the home of one of the children; a pet store; a supermarket; a walk in

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[8]Procedures and techniques were pretested informally in two Centers during the previous spring. On the basis of the apparent feasibility of certain procedures and the receptivity of the children and teachers, some procedures were retained while others were dropped or modified.

the neighborhood); activities or events introduced for the first time by the teacher (planting seeds; blowing bubbles; making pudding); unexpected chance events (a visitor brings a turtle to the room).

Though these events and activities occurred naturalistically within a classroom setting, they were regarded as relatively standardized stimulus situations. That is, since they were occurring for the first time, they were considered to provide all children exposed to them with similar opportunities for exploratory reactions. Observational records of these events have provided basic data, in this study, for the assessment of curiosity and exploratory behavior among the children.

In Center A, there were 15 group records, of which eight clearly involved new situations and yielded differential ratings.

In Center B, there were ten group records, of which three were clearly of new situations and yielded differential ratings.[9]

2. Observations of individual study children

Two observations were made of each child during free play periods. One observation was for a half-hour period and one for 15 minutes. These data are not included in the present report.

B. Teacher rankings

The teachers were asked to rank all the children of their group according to the extent of curiosity and exploratory behavior. They were provided with a guiding definition (see Appendix A) which included the following elements: reactions to changes in the familiar setting; the nature of response to new experiences; exploration during free play; and the asking of questions or seeking of information.[10]

The Observer who had taken the narrative records (but had done no coding) was also asked at the end of the project to rank the children of each group, following this same definition as a guide.

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[9]The difference in the number of selected records is partly a function of time, since Center B was selected later than Center A, and partly a function of the educationally important fact that some teachers provide more such experiences for children than others.

[10]The definition and illustrative examples were adapted for four year olds from the work of Maw and Maw (1961).

C. Individual sessions

Four sessions were conducted with each child. Each session was approximately one half hour in length.

Session One

A short period of free play was followed by a series of three techniques administered in the following order:[11]

Object Comparisons. Objects of different sizes and textures were presented to the child for comparisons. They were presented in combinations of two or three objects.

Size comparisons involved four sets of stimuli, the objects within each set varying in size: three trucks, three cups, three balls, three threads. In each instance, the child was asked to indicate which was the biggest (or the smallest). In addition, the child was shown: a) a block in the shape of an arch, and asked "Which truck can go through the tunnel?"; b) a cup, and asked "Which ball can fit into the cup?" In each case, only the smallest of the three objects would fit. The child's process of estimation and validation was noted.

Texture comparisons involved three sets of stimuli: a soft and a hard toy tiger; a chick and a bead of the same size and color; a square of felt and a square of sandpaper. In each case, the child was asked to indicate which one was soft (or hard).

Data from this technique have been used in the assessment of concept formation.

Mirror Games. The Interviewer took the child to a full length mirror and instituted a series of three games, in the order listed. These were carried out in a playful spirit, usually with body contact between the interviewer and the child:

a) Action (not used in analysis) — After an initial "Who's that?" to focus the child on his image and on responding, the interviewer asked, as both looked at the child in the mirror, "What do you look like when you...." (raise your hands high over your head; jump up and down...etc.) There were five items.

[11]The session also included play with puppets, but these data have not been included in the present report.

b) Identification of body parts	The interviewer said "Let's see you touch your ...."(Knee, shoulder, elbow, chin, cheek)
c) Affect differentiation	The interviewer said "Let's see what you look like when you're..." (very happy; very mad; very sleepy; very sad)

Drawing. The child was given a sheet of paper and three crayons and asked to draw a picture of himself (i.e. "Draw a picture of Donnie.")

Data from the Mirror Games and Drawing have been used in the assessment of self-image.

Session Two

This session consisted of two techniques:

Kaleidoscope. When the child entered the room, a kaleidoscope was the only object on the table. The Interviewer observed and recorded the child's reactions for a period of two minutes.

Data from this observation have been used in the assessment of curiosity and exploration.

Semi-Structured Play: dilemma situations with family figures. The Interviewer set up a series of four dilemma situations, acting them out with small Negro rubber dolls and asking the child to finish each story.

The Interviewer first presented the child with a child figure of the same sex, then said "Let's give him[12] a family." As the child named figures, the Interviewer supplied appropriate dolls from an envelope until the child was finished or the supply exhausted.[13] If the child did not spontaneously mention a mother, he was asked if he would like to have a mother also. The Interviewer then presented the following dilemma situations, manipulating the child figure while describing the situation:

1) Let's say this boy was out playing and he comes in hungry... What happens next?

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[12]Figures and pronouns were appropriately adapted in all situations for girls.

[13]The supply of figures provided for "extended families." It consisted of four adult females (one a grandmother figure), two adult males, three boys, three girls and two babies.

2) Let's say this boy sees somebody having a party and having a lot of fun. He comes back in his house and wants somebody to take him to the party to have fun too. What happens?

3) Let's say the family is all here in the house and the boy goes out and goes walking and -- he gets lost. He doesn't know where he is. What happens next?

4) Let's say the boy is playing and another boy comes along and wants to hit him. What happens next?

Data obtained from this technique have been used in assessing dynamic variables: the child's perception of adults, his projections of coping possibilities (dilemma resolutions), and the prevalence of aggressive and sexual themes.

Session Three

A Classification Test was administered during the third session. This test is part of a battery developed by Educational Testing Service.[14] The child was presented with an array of 24 small objects (figures, plastic fruit, animals, writing utensils, etc.) and asked, in a series of ten items, to place together things that "belong with" the stimulus. Stimuli consisted of single objects (Items 1-5); a pair of objects (Items 6 and 7); and a verbal classification, e.g. "all the red things" (Items 8-10). The Interviewer presented the test and an Observer recorded the selections and verbalizations.

Data from this test have been used in the assessment of concept formation.

Session Four

The Matrix Test, developed by the Research Department of Bank Street College, was administered during the fourth session. This session was conducted five months after the period of primary data collection and only 16 children were available for testing. The Matrix Test is also a classification task, but involves pictures rather than three dimensional objects. The data have been used for the assessment of concept formation.

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[14]The writer wishes to thank the staff of Educational Testing Service for their courtesy in demonstrating their material and making it available during the period of its development. For further descriptions of the battery and their research see: Educational Testing Service Research Memorandum, Cognitive Growth in Preschool Children, 1968.

Measures

Curiosity and Exploration

The development of measures in this area, and an assessment of their interrelationship, was one of the objectives of the study. The following measures have been developed:

Curiosity and exploration I: observation of new situations. Narrative records of new situations were coded for: the extent to which each child participated actively in the situation; varied his activities in relation to new objects and experiences; sought an extension of contact with new things; asked questions; noticed and called attention to objects, details or facets of the situation that were not focalized for the group by others. On the basis of these coded criteria, children were rated for each situation; ratings were averaged for all selected situations and rank orders assigned on the basis of this average.

It might be noted that observational records of new experiences can be obtained in almost any ongoing preschool situation without special arrangements or interference. Because of this practical fact, as well as particular interest in the viability of measures obtained from naturalistic situations, this observational score has been regarded as the basic assessment of curiosity and exploration, in this study, and has been used in all tests of relationship with other variables.

Curiosity and exploration II: teacher rankings (and observer rankings). As indicated in the previous section, teachers ranked the children of their group on the extent of curiosity and exploration, as they perceived this for each child in the preschool situation. The observer also ranked the children of each group at the completion of the project.

Curiosity and exploration III: Object Curiosity Score (Kaleidoscope situation). The child's reactions to the kaleidoscope were coded for: initial reaction; span of involvement; object manipulation; questions; novelty-seeking behavior; and incorporation of the object into complex play. A point system was applied (see Appendix B), and an Object Curiosity Score obtained.[15] The children were then ranked.

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[15]The work of Lucco (1965), McReynolds et al. (1961) and Pangrac (1963), measuring children's curiosity and information-seeking behavior in relation to objects, provided valuable suggestions for the development of a point score.

Curiosity and exploration IV: session checklist. The interviewer filled in a checklist after Session One, recording the child's questions or explorations concerning: objects in the testing room (furniture, etc.); outside stimuli (noises, etc.); the interviewer; objects used by the interviewer (pens, glasses, etc.); toy equipment not in immediate use. Checked items were tallied.

Self-Image

Differentiation and integration of self-image was considered a theoretically crucial concept, in this study, and an attempt was made to measure this dimension through drawings and mirror games.

Differentiation and integration of self-image (Drawings: D-I Score). Drawings were ranked according to the impression they conveyed of a differentiated human form.[16]

Drawings were also scored according to the Goodenough-Harris system for estimating intelligence (Harris, 1963).

Affect differentiation (Mirror game). The number of appropriate and recognizable responses to the mood stimuli (happy, mad, etc.) was tallied. Possible range: 0-4.

Differentiation of body parts (Mirror game). The number of parts correctly identified was tallied. Possible range: 0-5.

Perceptions of Adults and the Environment

These variables concern, essentially, the child's perception of the environment and his expectations concerning the reduction of pain and the extension of pleasure.

Coping and resolution (semi-structured play). Protocols of the reactions to dilemma situations were ranked according to the positive-negative qualities of the child's projections. Positive clues included: coherent, role-relevant adult figures; resolution of dilemmae in positive or reasonable terms; effectiveness of adults and/or children; clarity of events. Negative clues included: amorphous, ineffective adult figures and roles; very negative resolutions; sustained or compounded dilemmae; overwhelmed child figures;

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[16]Rank orders of two independent raters correlated r = .97.

unclear events.[17]

Perception of effective adults (semi-structured play). The number of dilemmae in which the child invoked effective and positive adults was tallied.

Dilemma resolutions (semi-structured play). The number of dilemmae successfully or reasonably resolved, by whatever agent, was tallied.

Aggression and sex. Protocols were annotated for the presence of outright sexual content in the child's spontaneous play with the figures (figures kissing, hugging, going to bed together, rolling together, etc.), and for development of play in which aggression became rampant (fighting, trampling, killing, acted out through the figures and usually marked by rising excitement in the child as he played).

Concept Formation

Concept formation I: Object Comparison. Correct responses, on this task, were tallied and a score obtained. The children were then ranked.

It might be noted that this score represents the child's concept formation in the most experiential, perceptually-dependent and action-dominated of the three tests; in this situation, children could test their hypotheses perceptually (by sight or touch) and in part by action (moving the trucks through the tunnel, putting the balls in the cup).

Concept formation II: Classification Test. Protocols were coded according to the preliminary system developed by Educational Testing Service. A point system was then developed (see Appendix C) and a total score obtained.[18] The children were then ranked.

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[17]Though this ranking constitutes an overall evaluation of the child's protocol, it was made after the two more specific analyses described in the following two scores. It was thus primarily an integrative ranking rather than an impressionistic evaluation.

[18]The performance of these young and disadvantaged children was generally quite poor. The point system was developed for this project to take account of differences among them, in terms of the extent of purposeful groupings, attempts at rational explanations, etc. Such a system does not necessarily reflect the approach of ETS to this test, nor does it substitute for their more formal and standardized procedures for analysis, as these are being developed.

Concept formation III: Matrix Test. Correct responses were tallied and a total score obtained. Children were then ranked.

This score represents the child's concept formation in the least experiential of the test situations, since the stimuli were pictures rather than objects that could be handled and moved.

Statistical Analysis

Data have been analyzed through rank order correlations (Spearman rank correlation coefficient), where the data permitted ranking, and through Chi Square (2x2) comparisons -- above and below the median -- where they did not. Fisher's Exact Probability Test was applied as a check on significance levels (Siegel, 1956).

III. RESULTS

Results will be presented in two sections. The first will present the data concerning curiosity and exploration. The second will present the relationships between exploratory behavior and other developmental variables.

Curiosity and Exploration

A. Consistency of Measures

The several ways of assessing curiosity and exploration, in this study, represent an attempt to evaluate the consistency of the children's behavior and, indirectly, the stability of the concept. The basic question was whether the children could be systematically described in ways that would yield a consistent evaluation of how they stood, in relation to each other, on this kind of exploratory reaction to the environment. The several measures provide a check on each other. At the same time, each involves a somewhat different situation. The situations vary along naturalistic-laboratory dimensions (preschool observations vs. kaleidoscope and checklist), and the data vary in terms of immediate recording (preschool observations, kaleidoscope, checklist) as opposed to the integration of long-term impressions (teacher and observer rankings). Under these circumstances, we might expect both consistency and some degree of variation.

As indicated in Table 2, there was considerable consistency in the various assessments, indicating a relatively stable stance on the part of the children.

Observations in the preschool setting, object curiosity in relation to the kaleidoscope, and observer rankings form a particularly consistent cluster of evaluations. Translated, this would indicate that the exploratory behavior of the children in response to a new object, tested under laboratory conditions, was consistent with their relative response to exploratory opportunities in the daily school environment, and that the observer's perception of the children in each group[19] was consistent with this other evidence. That the observer agreed so well with the observational ranks may be regarded as a partial artifact, since she took the observational records. She had no hand in their analysis, however, and the close agreement between her rankings and the scores based on analysis of the records provides, at the very least, an indirect measure of rating reliability. In addition, the observer's rankings are also significantly related, for both groups, to the object curiosity score in the kaleidoscope situation, with which she had no contact.

The two teachers differed in the extent of their agreement with other assessments. The teacher in Center B agreed well with both the observer's rankings and the object curiosity score; the teacher in Center A did not agree significantly with any other source of data. The rankings of both teachers correlated positively with observations of behavior in their classrooms, but not at significant levels.

One source of data is clearly aberrant: the session checklist. By inspection, the explanation seems clear. Exploration of extraneous objects and events in the testing situation, as defined by the checklist, seemed to depend on two quite different attitudes: generalized curiosity (consistent with the responses assessed in other measures) and distractability, or lack of involvement in the ongoing test procedures. Some of the more exploratory children reacted to the total situation and some were involved primarily in the central activities of the session, creating a different distribution of high and low scores than characterized the other situations.

Where the measures are not consistent they involve factors familiar in multiple measurement research: inconsistency in the subjects,

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[19]It should be noted that the Centers could be combined for ranking on all measures that yielded scores, but that the teachers and observer ranked the children only in reference to their own classmates.

Table 2

Curiosity and Exploration: Interrelations among Measures

	OBSERVATIONS: NEW PRESCHOOL SITUATIONS	TEACHER RANKINGS	OBSERVER RANKINGS	OBJECT CURIOSITY: KALEIDOSCOPE	SESSION CHECKLIST
OBSERVATIONS: NEW PRESCHOOL SITUATIONS					
TEACHER RANKINGS	Center A: r=.38[1] Center B: r=.55				
OBSERVER RANKINGS	Center A: r=.91** Center B: r=.86**	Center A: r=.28 Center B: r=.76*			
OBJECT CURIOSITY: KALEIDOSCOPE	r=.70**	Center A: r=.32 Center B: r=.67*	Center A: r=.68* Center B: r=.93**		
SESSION CHECKLIST	$\chi 2$=.24[2] NS	Center A: NS[3] Center B: NS	Center A: NS Center B: NS	$\chi 2$=.24 NS	

**p < .01
*p < .05

[1]Spearman Rank Correlation Coefficient.

[2]Sample divided at the median.

[3]Small N's did not permit Chi-square analysis; by inspection of tallies, no relationship.

fallibility of the measurements and variation as a function of different stimulus situations. By and large, however, the evidence of consistency, as indicated in Table 2, is impressive and provides a stable basis both for describing the children and for assessing relationships between this dimension and other developmental variables.

Closer inspection of the pattern of scores for each child confirms the finding (see Appendix D). Using the median to divide the children into High and Low groups, on each score, five children are seen to be consistent on all measures, seven more on all but one measure (generally the session checklist), and one child ranks very high on three of the measures; his teacher's ranking just below the median is somewhat puzzling. Quantitatively, then, 13 of the children present a clearly consistent pattern; qualitatively, only three of the children seemed to raise genuine questions of placement.

Of the 11 most consistent children,[20] five ranked high and six low. The small size of the sample does not permit a reliable assessment of sex differences, but there seems to be no particular pattern, on inspection.[21] The consistently high group contains three boys, two girls (with an additional boy and girl as candidates), and the consistently low group contains four girls and two boys.

B. Qualitative Aspects

In addition to its quantifiable features, the data provided information on other aspects of exploratory behavior and curiosity: impressions of the general level of expressed curiosity in this sample; data concerning the more frequent forms and modes of exploratory response in the group; and variations among children in their typical styles of exploratory behavior.

The general level of expressed curiosity and exploratory behavior in this population of children was relatively low. Many of the children classified as "high" in this group would not appear high in comparison with other and more privileged populations of four-year-old children.[22] Children of this disadvantaged population differed from

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[20] Considering ranks, rather than simply placement above or below the median.

[21] Findings from other research are somewhat equivocal with respect to sex differences, though there is some suggestion that boys are more stable across varied situations (Lucco, 1965; Smock and Holt, 1962).

[22] A comparative study with middle-class four year olds, at this point, would provide valuable and more specific data.

each other, but few of them spontaneously used the potential of the environment in the varied and exploratory ways known to be possible among children of this age. A trip to the zoo with one of the groups provided dramatic impressionistic evidence, convincing to any observer acquainted with young children in similar surroundings. These children were generally characterized by a trudging passivity, as they moved from section to section, with little excitement or affect, no strong approaches to new sights, and passive observation rather than comments or questions. To the adult who has experienced the excited, involved and insatiable reactions of other young children to the zoo, such an experience is impressive.[23]

In less dramatic form, other new situations elicited a similar pattern, though this varied with the situation. There were not many questions when the children went to the firehouse, when they observed a turtle brought to the room, about the pudding they were preparing or the seeds they were planting, and there was little attempt to connect aspects of these events with other, non-present aspects of their lives. There were some instances when children noticed events or objects that were not focal for the group, or asked information-seeking questions. Daniel pointed out a sculptured pair of hands at the second story level of a building; Carl asked "Who that walking upstairs?"; Tara noticed the closed door to another room and asked the museum guard what was inside and whether she could go in. Children pointed out a squirrel in the park, the kite caught in the telephone wires, the watch on the bus driver's trousers, etc. These reactions characterized some children more than others -- a prime interest of the study -- and, more pertinent to this point, they were infrequent enough in the group at large to be noteworthy.

Actual questions were infrequent. Sixteen information-seeking questions were recorded in the course of the 25 group observations.[24] Questions in the kaleidoscope situation were more typical, 12 of the children asking questions regarding the object, mostly at a general level ("What's this?" "What's in here?").

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[23]This experience may have been, in actuality, particularly overwhelming for the children, on a first visit, since it involved open spaces, varied and strong stimuli, and large animals.

[24]This includes study children only. In Center B, one child, attending for the second year and thus not in the sample, was by far the most active and curious child in the group. His questions and reactions in a variety of situations were a reminder of the extent to which high ratings for other children were relative rather than absolute.

The new situations in the school setting varied in their power to mobilize exploratory behavior among the children. Blowing bubbles, a visit to the pet store, a trip to a museum of old toys, preparation of a pudding, seemed to arouse more curiosity and/or more exploratory reactions than such events as a trip to the airport or a lesson at the flannel board with shapes and colors. If one were to abstract the major situational qualities, the former seemed more experiential and personally meaningful. They involved movement and action, the appeal of desirable objects and the possibility for direct experience in a not too complicated way. The other, less mobilizing experiences, required the child to focus on elements in a complex situation and to organize his impressions, or to deal with symbolic and indirect material. Handling, manipulation and direct contact were the most prevalent modes of exploration among the children, and situations that allowed for these modes drew the greatest participation. Most of the children were spontaneously involved in the blowing of bubbles, in exploring the sensation of the soapy water and their impact upon it, in beating the pudding and in tasting the dough.

The implications seem twofold. Theoretically, the modal forms of exploration among these children, as described above, would need to be seen as developmentally quite young. If direct experiential modes are characteristic of all four year olds, they seem particularly prevalent, in comparison with more symbolic and verbal modes, among these children. Educationally, the data have some implications for the kinds of experience most apt to mobilize and involve reasonable percentages of the preschool disadvantaged population. The more distant and symbolic activities seem not to mobilize as much spontaneous participation as the more directly experiential.[25] The balance of these experiences in the daily program is a matter of educational decision, and is related to the basic conception of the purposes of the preschool experience.

Stylistic variations among the children can best be described, perhaps, through illustrative examples.

Daniel. Daniel was the child who most consistently noted peripheral things and pointed them out, with comments and sometimes questions:

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[25]Activities can often be made more experiential by the teacher; the point here is only that some situations have inherent qualities that mobilize the children more directly than others.

the battery in the sand at the playground ("Can you use it in your camera?"); the pigeons on the roof; the sculpture on the building; the car without wheels propped on a basket; the airplane ("Where that plane going? Is people on it?"). He seemed to have a frame of reference from which to react to the discrepant. He reacted also at a more motor level, trying out the turnstile in the supermarket and the equipment in the new playground, and had the more primitive tasting, licking, handling responses when the group was preparing pudding. His pace was not so fast as some of the other boys nor his impact as noisy. He played in sustained ways with things like puzzles. Daniel was not one of the children most responsive in dialogues with the teacher at discussion times (an explanation for the fact, perhaps, that she did not rate him particularly high). He was less verbal than some of the other children and less informed about some things, but his constant quiet curiosity, receptiveness to new stimuli and experiential seeking placed him high in his group.

Carl. Carl's style was more outgoing and assertive. He was one of the few children who consistently reacted with an anticipatory "Yes!" to the very idea of a new experience. He was physically active, a leader into new situations and impressive, in this group, for his verbal skill and fund of information. Though he would rank second to Daniel in the noticing of things, he also picked up the out-of-focus ("Who that walking upstairs?"; "Where that other girl is?" -- a reaction to the absence of a girl newly met who had gone out of the room). Perhaps this was less developed than it might have been because of his fast pace, his high activitity and the domination of his constant verbalization by a flood of inner fantasy and association. Nonetheless, his fantasies wove back and forth with real events and he was observant. Carl was also the child who most actively explored relationships with other children.

Tara. Tara was the most exploratory study child in her group. She also had an "approach" attitude toward new experience. She was the first one into the firehouse, the most active at the museum -- noticing, pointing and manipulating -- and was the child who literally attempted to extend the scope of her explorations by asking the museum guard "What's in here?", in relation to a closed door, and wanting to have it opened and shown. Sensory-motor experience was an important modality for Tara -- handling the turtle, climbing the steering wheel in the museum, beating the pudding with eagerness. She had some of Daniel's quality, noticing and calling attention to things, but she asked no questions. There was some suggestion that a hunger for things and possessions was an important factor in Tara's active searching. She rummaged in the teacher's drawer for objects she could keep, as well as out of sheer curiosity, and was clear and almost demanding in her wish to take the attractive museum toys home "for Christmas."

Rose. Rose was the low anchorage point of her group in every way. What she took in silently one could not know, but her physical participation and verbal expression were minimal. She hung back in new situations, said little or nothing, made no comments and asked no questions. Her pace was slow and her expression passive, though more large-eyed and apprehensive than blank. She made occasional abortive movements into situations, but consistently established a baseline of non-reactivity; she tended mostly to drift or to stay at the fringe, observing without entering.

Marie. Marie shared some of Rose's qualities. She gave little sign of curiosity, was not an initiator of exploration, was not an active participant in activities. Yet she talked more than Rose, sometimes followed along in activities and was observed in one situation where she called the group's attention to an animal in the park and later questioned a clerk about a particular bird in the store. Her inhibition was less pervasive and consistent than Rose's.

Mickey. In some senses, Mickey's low position was clear. He never noticed or commented on peripheral events, though his speech was adequate; never asked questions; did not respond in the teacher's discussions with children. Yet his pattern was distinct from the other children characterized as low in curiosity. In some ways he was much more responsive, but only to experiences placed directly before him and then in a sensory-motor and relatively infantile way. Mickey gave some impression of a new awakening. He was an eager, amorphous participant in some of the events, but seemed to have less know-how and life experience even than other children of this disadvantaged population. Every experience was a "first." His maladept quality is symbolized by the fact that he was the only child to first inhale the soapy water through his straw, as he tried to blow bubbles -- graduating then, with instruction, to a delighted mastery of the experience. He seemed the paradigm of a child whose focal attention is poor and whose internalized expectations are too amorphous to permit perception of the discrepant. He seemed to seek experience and participation, but in ways that were still fumbling, immature and inconsistent. Perhaps he was newly mobilized by the preschool setting and opportunities.

Relationship between Curiosity and Exploration and Other Developmental Variables

Expressed curiosity and exploration among the children was reliably related to all other aspects of dynamic and cognitive development

assessed by the project. As indicated in Table 3, the extent of curiosity and exploration, as determined from ratings in the preschool situation, is significantly associated with more differentiated self-image, a more positive expectation of adult support and dilemma resolution in the environment, and greater conceptual mastery.[26] In the following sections the findings will be presented in greater detail, with consideration of the general characteristics of the children's responses and the differential pattern of relationships.

Self-Image

Assessment of self-image in four year olds presents a difficult problem, partly because self-image is changing and unstable, at such early ages, and partly because feasible and relevant techniques are few.[27]

In this study, the assumption was made that the child's drawing of himself offered some clue to the degree of differentiation and integration of his self-concept. It is generally accepted, theoretically, that the infant starts with no sense of a separate self and that his concept of himself as a separate, differentiated and integrated person develops slowly with maturation and experience; drawings presumably reflect that development.

Measures obtained from the mirror games represented attempts to assess the child's knowledge concerning parts of his body and his capacity to communicate gradations of affect.

The range of drawings, in this sample, was remarkable. They ranged from several that consisted of random circles, dots and scrawls -- totally unintegrated -- to several that represented a complete human form, albeit irregular or imbalanced, with differentiated and recognizable features. It is noteworthy that the children were asked to draw immediately after the mirror games, during which they had face-to-face contact with themselves and had, in a sense, "rehearsed" the identification of body parts and facial expressions. It is particularly interesting and important that so many children produced amorphous and undifferentiated drawings under those conditions.

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[26]As noted, the ratings obtained from observations in the preschool are regarded as the basic measure of curiosity and exploration. In the following sections, however, note is made of the relationship between the independent variables and two other measures: teacher rankings and object curiosity (kaleidoscope). Relationships to observer rankings and the session checklist were not calculated, the former because they closely paralleled the preschool observation scores and the latter because the meaning of the score was unclear.

[27]A recent technique has been developed by Brown (1966), using a photograph and self-referential evaluations on the part of the child.

Table 3

Relation between Preschool Observational Measures of Curiosity and Exploration and Other Developmental Variables

Developmental Variables	Rank Correlation Coefficient	Chi-Square Analysis
Self-Image:		
Differentiation and integration of self-image (D-I Score, Drawings)	.63**	
Affect differentiation		$\chi 2=5.56$*[1]
Differentiation of body parts		$\chi 2$ NS
Perceptions of Adults and the Environment:		
Coping and resolution	.76**	
Perception of effective adults		$\chi 2=11.46$**
Dilemma resolution		$\chi 2=8.10$**
Concept Formation:		
Concept formation I: object comparison	.48*	
Concept formation II: classification test	.53*	
Concept formation III: matrix test	.30	

**p < .01
*p < .05

[1]Significance levels determined by Fisher's Exact Probability Test (Siegel, 1956).

The relationship between rankings of the Differentiated-Integrated Image (D-I score) and rankings of the Goodenough-Harris Standard Score was almost perfect (r = .96). It can of course be maintained that the D-I score is thus simply an estimate of relative intelligence. It seems equally possible, however, to regard intelligence, at this stage, as having developmental features, and to consider that its measurement through drawings is essentially a reflection of the child's development toward the cognitive grasp of a differentiated and integrated human form.[28]

In this sample, the Standard Score (Goodenough-Harris) of only one child was above 100 (104). Six others scored between 80 and 100, and the remainder (9 children) between 50 and 75; the latter group placed in the fourth percentile or under. While poor standardization of the scoring and norms for very young Negro inner city children is probably a factor, the general import of these findings places the group far behind middle-class children in the level of their drawings.

Affect differentiation provided extremely interesting data. It is, of course, a questionable procedure to ask very young children to recreate the expression of different moods which they do not feel at the time; it requires a level of recall and self-distance that does not seem developmentally apt for four year olds, for whom action and emotion are generally immediate and the recall of feeling low. Yet the observations of disorganized lower-class families suggested that there are often few gradations in the expression of affect; it seemed worthwhile to try to tap this in the children. The technique proved effective and the range of reactions was interesting. Children tended either towards no response and vague facial expressions or toward delighted participation and easily recognizable facial and postural changes. The latter group expressed sleepiness through closed eyes and hung heads; anger through fierce faces; sadness through pouting mouths and drooping postures; happiness through broad grins. Sometimes they giggled and "broke up," after assuming sad or angry expressions, but their intentions and changes of expression were clear.

The identification of body parts seemed to tap mostly vocabulary and knowledge. Only two children were able to point correctly to all five parts named.[29]

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[28]In this pilot study, no formal test of intelligence was included, since this area of research with disadvantaged children seemed well covered. In retrospect, such data would have proven of some interest in rounding out the profile of the children.

[29]The three measures were not reliably related to each other, though the tally of drawing scores and affect differentiation scores ($\chi 2 = 2.26$, NS) suggested a trend of association in the expected direction.

As indicated in Table 3, curiosity and exploration, measured by preschool observations, was significantly related both to the level of integration and differentiation in the drawings and to the differentiation of affect in the mirror games. It was not related to the differentiation of body parts, perhaps because of the greater component of language and knowledge involved in this procedure. Other measures of curiosity followed the same pattern, but generally with less strength of association and not at statistically significant levels.[30] Associations at Center A were stronger than at Center B. The Object Curiosity Score was the poorest predictor of self-image measures.

In general, the data suggest, as predicted, that the more curious and exploratory children were those with a more differentiated and coherent self-concept and with more expressive gradations of affect, at least as these dimensions were measured here. Amorphous and undifferentiated projections of affect and form were more characteristic of children with limited exploratory behavior.

Perceptions of Adults and the Environment

Reactions to the semi-structured play situations provided some of the most interesting data of the study. All the children seemed to understand this technique and respond in relevant ways, though some moved quickly into other play with the figures.

The choice of a "family" for the child figure was in itself a source of great variation. A small handful of children set up conventional role figures, with mother, father and siblings, but choices by the majority of the children involved a collection of figures, many of whom were referred to as "a lady" or "a man" rather than by relational names (mother, father, etc.). There were grandmothers, aunts, a variety of people not clearly identified and, with some frequency, multiple mothers and fathers were requested ("another lady"; "another daddy"). Almost no "family" matched the composition of the child's literal household, but the choices seemed to reflect in general the varied and extended households prevalent in the sample.

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[30] Object Curiosity and Drawings (D-I): $r = .26$; Object Curiosity and both Affect Differentiation and Differentiation of Body Parts: $\chi 2$ NS. Teacher Rankings and Drawings (D-I): Center A, $r = .63$ ($p < .05$); Center B, $r = .43$. Analysis by Center of relationships between Drawings and curiosity and exploration as assessed through preschool observations were similar to those established by teacher rankings in the two Centers, but were higher (Center A, $r = .73$; Center B, $r = .52$).

The population of adults who acted in effective, protective or facilitating ways seemed thin. Such an impression cannot be checked without a control population, but at face value it seems clear. Only eight children clearly invoked adults in such roles at all, and only six of these in two or more dilemmae. There was some reservoir of resourcefulness in the children, however. Sometimes the child in the dilemma got food for himself, found his own way home, or was helped by another child -- a pattern also of interest to check against a middle-class sample. The number of dilemmae reasonably resolved, thus, outweighed the number in which adults played helpful or effective roles. By and large, however, there was a high incidence of situations in which the dilemma was sustained or ended in pain and distress.

In terms of the overall quality of coping and resolution, there were clear top and bottom groups, each consisting of five children. The five protocols in the upper group were characterized by a number of features. Usually the family structure was clear and there were figures referred to by role names. More important, dilemmae were resolved in positive or at least reasonable ways. The mother fed the hungry child. In one case the meal was described as "some rice, some peas, some meat, some bread, some milk" -- a unique differentiation in this sample; in another, the child was fed and then given a second portion; in a third, the child "sit down and wait for the food to get done" (in a rare indication, again, of frustration tolerance). The child figure generally got to the party, in these protocols, though one situation was characterized by firm handling rather than the granting of the wish. ("His mudder said no. That's what my mommy said.") Lost children were generally brought home by adults or another child, though one boy was then whipped by his father. In one case, the child invoked friendly police (the only instance in the protocols), the child's own resources of information and orientation and -- for safety's sake -- commented that he would not get lost because he would stay with his mother and father. Threat of attack by another child was generally met by confident retaliation by the self-figure, or at least by comfort and protection from adults.

These protocols were not without moments of defeat, aggression and disappointment, but they projected an image of a predictable and manageable world, where adults played varied and coherent roles, where pleasure could be facilitated and most pain and anxiety alleviated.

It is never certain, of course, whether projective material conveys wish, fear or actual reality. These few protocols, however, had the qualities of coherence, organization and role-relevant behavior that suggest at least some realistic experience with effective adult models and with events that proceed in some orderly and relatively reassuring

sequence from beginning to end. We might expect more such protocols from a middle-class sample of children but, again, the establishment of such a fact awaits further research.

Protocols from the low group create the impression of a chaotic and defeating environment. Dilemmae were generally not resolved. Often the dilemma was compounded and spread ("Her hungry. And this girl hungry. And this boy hungry. And all the mudders hungry"). Lost children were not found ("Her gonna die"; "Her don't know where her at"), or "A monster will get her and he gonna bring her back." There is a quality of disorganization or depression to these protocols. They contain a preponderance of figures that are not stable in identity nor clearly differentiated in roles, and they convey some sense that there is no beginning or end to situations that require resolution and coping.

Sex and aggression play a large and open role in some of the protocols, though not only in these low coping records. Sexual content appears in the play of six children (two from the uppermost group and two from the lowest), while rampant aggression appears in seven protocols (one from the uppermost group and two from the lowest). Sex and aggression are familiar themes in the play of children this age; the quality of the play in some cases, however, suggests that some of the children live very closely and realistically with open sexual behavior and violent aggression.

Illustrative protocols of relatively high and low coping and resolution appear in Appendix E.

Curiosity and exploration relate significantly to measures of coping and resolution, as indicated in Table 3, both for the overall ranking and for the separate analyses concerning the perception of effective adults and the number of dilemma resolutions. The five children cited as projecting the most coherent, predictable and facilitating environments were all rated above the median in the preschool observations of curiosity and exploration. The six children who projected chaotic and dilemma sustaining environments were all rated below the median in curiosity and exploration; they constituted, in fact, five of the six children in the lowest third of the observational ranks.

The Object Curiosity Score and the teacher rankings supported this finding, at significant levels, though the strength of association is greater with assessments based on preschool observations.[31]

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[31]For these measures, correlations were calculated only with the overall ranking of Coping and Resolution. The Object Curiosity Score correlated $r = .55$ ($p < .02$) with this score, and the teacher rankings correlated $r = .58$ ($p < .05$) and $r = .47$ for Centers A and B, respectively. Though the latter is not significant it is clearly in the same direction. Preschool observation ranks, calculated separately for the two Centers, correlated $r = .79$ ($p < .01$ and $p < .05$) with Coping and Resolution, in each case.

The presence of open sexual content and aggressive play was not associated with the extent of exploratory behavior.

In general, the prediction is clearly borne out. The more exploratory children were more apt to project a coherent, predictable and supportive environment, populated with more effective and differentiated adults and characterized by some expectations of dilemma resolution. The less exploratory children projected a diffuse environment, where there was little evidence of facilitating figures and dilemmae were sustained.

It is of course pertinent to inquire whether these projections reflect the actual environment of the child. Family data available for this project were relatively scanty. There is no definite relationship to the official description of family structure, as reported to the Get Set Center. Of the five children cited in the top group of protocols, two came from intact families (though one did not live with his parents during the week), two came from extended, fatherless households and one from a situation incompletely described but including eight siblings and welfare status. In the lowest group, four of the five children came from fatherless homes and lived in extended households. The fifth came from an intact family with seven children, of which she was the fifth. The relevant family variables, however, are probably those cited earlier in the report: the nature of adults models; the quality of coping; the relations and communication among people; the prevalence of excessive stimulation; the attitudes toward children; the effectiveness of adults. These are not self-evident from the visible family structure, though there may be correlated features. Evaluation of these variables would require deeper study and evaluation of the family and its life patterns; if these could be assessed, they might well prove to be associated with the expectations and imagery projected by the children.

Concept Formation

Curiosity and exploratory behavior were also related to concept formation (Table 3), though the findings here are not completely consistent.

As noted earlier, the three tasks placed the children in different kinds of situations, though all three assessed their ability to categorize and differentiate among objects. The Object Comparison task was the most directly experiential; it allowed for physical contact and manipulation of objects and required relatively simple discriminations. As a group, the children did quite well in this situation; most seemed familiar and comfortable with the simple concepts of size

and texture (though not all) and had ways of using direct sense experience to check their hypotheses. Six of the children extended the ideas suggested by the test questions into their own play. One child spontaneously commented about the two toy tigers he was handling, "I know who's the biggest" and later, about other objects, "I know which one is smallest." Another spontaneously grouped the biggest and smallest objects of the several stimulus sets together, saying "This small one goes with this one, and this with this" -- categorizing, in other words, on a relative basis. These were spontaneous cognitive games, expressed through objects. It is of note that five of the six children who extended ideas in this way were rated high on most measures of curiosity and exploratory behavior.

Performance on the Matrix Test seemed poorest, for the group. Other research has pointed out that children of the disadvantaged population conceptualize more effectively with actual objects than with pictures and that pictures seem less readily to stand in for the objects they represent among these children than among children of the middle class (Sigel, 1965). Perhaps this was a factor in this study, where only the Matrix Test presented pictures as stimuli. Performance on the Classification Test was also fairly poor for the group, however, though the children were more effective when a category was supplied (red things; things to write or draw with; food) and they could recognize and select relevant objects -- a simpler process than abstracting elements from a visual stimulus on one's own, selecting other objects with such properties and then verbalizing a principle (the latter occurring only rarely in this sample.)

Object comparisons and the Classification Test correlated reasonably well with each other. The Matrix Test did not correlate significantly with either of the other tests, least of all with the task most different from it.[32]

Curiosity and exploration (preschool observation ranks) correlated significantly with both the object comparison and classification tasks. The correlation with the Matrix Test is in the same direction but not statistically significant (Table 2).

The Object Curiosity Score shows little relationship with any of the concept formation tests.[33] Teacher rankings present an interesting

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[32]Object comparison and Classification Test: $r = .51$ ($p < .05$). Matrix Test and Classification Test: $r = .33$. Matrix Test and Object Comparisons: $r = .13$.

[33]The relation of Object Curiosity Score to Object Comparisons: $r = .36$; to the Matrix Test: $r = .27$; to the Classification Test: $r = .14$.

pattern. The relationship is significant and quite high for two of the tests (Object Comparison and Classification Test) in Center A and negligible in all instances in Center B. Correlations for each Center, based on preschool observational ranks, support this pattern and extend it to include the Matrix Test.[34]

The difference between the two Centers has appeared in the data reported in the previous two sections, but it is most evident in connection with concept formation tests. The several assessments of curiosity and exploration were most consistent for children in Center B (see Table 2). Nonetheless, curiosity and exploratory behavior are better predictors of other developmental variables among children of Center A. This is so for most variables, but very clear regarding concept formation, where the relationship is strong in Center A and generally negligible in Center B, and where this pattern is seen whether the relationship is assessed through teacher rankings or through ratings of preschool observations. It seems possible that children at Center A varied more among themselves and that the syndrome being assessed thus came through more clearly.[35]

Though the extent of relationship varied with the test and the group of children, there was general support for the expectation that more exploratory behavior would be associated with greater conceptual mastery. The relationship may not hold at relatively abstract levels of conceptualization; in direct, experiential situations, however, the more exploratory children seemed better able to organize, discriminate and classify in the object world -- perhaps because of the inevitably greater feedback from their more active encounters with the world around them.

Illustrative profiles of rankings and median placements on all study dimensions appear in Appendix F.

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[34]Teacher Rankings and Object Comparisons: Center A, $r = .83$ ($p < .01$); Center B, $r = .15$ (Preschool rankings: $r = .48$ in each case). Teacher Rankings and Classification Test: Center A, $r = .60$ ($p < .05$); Center B, $r = -.15$ (Preschool rankings: $r = .72$ ($p < .05$) and $r = .33$, respectively). Teacher Rankings and Matrix: Center A, $r = .49$; Center B, $r = -.45$ (Preschool rankings: $r = .65$ ($p < .05$) and $r = -.12$, respectively).

[35]It is true that the study group at Center A seemed to include all the most and least obviously exploratory children, while two children at the upper end of the range were excluded from the study, at Center B, because they had been in school the previous year.

IV. SUMMARY AND DISCUSSION

The study set out to investigate curiosity and exploration in preschool disadvantaged children and to assess the relationship of this behavior to other dimensions of child development. It has proven possible to assess exploratory behavior in a variety of ways. Further, the study has indicated a relationship between such behavior and the nature of self-image, the child's perceptions and expectations of the environment and his level of conceptual mastery.

Measures of curiosity and exploration in this study tended to confirm each other and to suggest a generally consistent pattern of reaction on the part of the children. The children's behavior in the preschool setting itself -- their response to new experiences, their seeking of novelty, their alertness to events and objects around them -- provided important data which could be systematically evaluated. These data suggested a basically consistent stance toward environmental opportunities, among the children -- a stance ranging along the "approach-avoidance" continuum. Styles of approach or avoidance varied by child, but differences in the overall level could be determined.

Evidence from the preschool observational data was generally corroborated by the evaluations of teachers and observer, though the strength of agreement varied with groups and with raters, and by the responses of the children in a more confined and controlled laboratory situation. That the observations of children in the natural preschool setting yielded consistent and verifiable assessments is an important fact. It suggests that the necessary conditions exist for understanding the relative level of exploratory attitudes among the different children in <u>any</u> preschool group. It requires careful observation and the systematic analysis of those observations, but no interference or specialized techniques beyond the ongoing program.

Perhaps it has been possible to establish consistent patterns and relative rankings so easily, with such a small sample, because the range of children in preschool centers for the disadvantaged is really quite wide. They may differ from each other far more than meets the eye in looking at the children, their neighborhoods and their shared poverty status, with its attendant life problems. Some children from these situations seem to come into the preschool better equipped than others to make use of the opportunities. They notice, explore, and respond to a greater degree than the other children. Perhaps they can learn and grow under a wide variety of preschool programs, using whatever is offered as grist. It would be a mistake to imply that they have no "deficits" or strong emotional needs, or that they can move easily and with parity into any learning situation with middle-class privileged children. Their strength is

relative to other children of the disadvantaged population. They do not necessarily compare with their middle-class counterparts in knowledge, language or emotional security, and their level of curious and exploratory behavior does not appear to be on a par with the more vigorous of the middle-class children, whose generally advanced level of experience, information, language (and, perhaps, responsive models) allows them to notice and question much more. They seem basically more able to take useful experience from their environment, however, than other children in their groups. They are not only more active in encounters with their surroundings, but they seem to see the environment with greater coherence, have more expectation that adults will be helpful and effective (and thus are useful as teachers), have a more integrated sense of self and a more orderly way of grasping system in the physical environment (i.e., conceptual mastery). With these children, the preschool has more strength to build on; with close relationships and a rich program it may accomplish a great deal for these children.

The study has pointed, however, to what may be termed a "high risk population," in developmental terms, within these same disadvantaged preschool groups. The association between exploratory behavior and other developmental variables was strongly suggested, in this pilot study. Predictions were generally confirmed with respect to all the dimensions studied. If we consider the "low" end of all the variables, the data suggested that children who showed little curiosity or constructive exploratory behavior were also children whose image of themselves was diffuse, who projected an environment characterized by sustained crisis, little coherence and ineffective, poorly defined adults, and whose conceptual grasp of order and relationships in the physical environment was comparatively low.

Some six children of the study -- one third of the sample -- fit this general description, as assessed through the procedures of this study. They had individual profiles, including points of greater strength for some, but the syndrome suggested by the statistical pattern of associations was generally evident in these children (as the more positive syndrome was exemplified by certain others). Three were from one Center and three from the other, suggesting that children of high developmental risk probably appear in most preschool groups for the disadvantaged.

These children seem needy in every possible way. They can be expected to do poorly in school, but there is also risk that they will progress poorly in the larger goals of psychological development that involve differentiated functioning, effective coping and emotional maturity.

Preschool programs for children such as these may require complex and subtle efforts and a hierarchical organization of experiences. It is possible or probable that intervention in the life environment of these children is an essential for their growth. This project has not established a connection between psychological features of the family environment and the reactions of the children -- though some assumptions about lower-class, inner city, disorganized families guided construction of the predictions -- since it had no data for assessing such connections. It seems possible, however, that such connections exist and that optimal progress for these children depends partly on intervention in the total family system.[36] In addition, however, the preschool program itself may need to establish a hierarchy of approaches to these children. The predominant emphasis, in many of the current preschool programs for disadvantaged children, is on language training, labeling drill and conceptual exercises -- all considered relevant for later school success. It is doubtful, however, whether children who have such an amorphous image of themselves and the world and who know so little can use such training; it may be particularly questioned whether children who see adults as ineffective and have little expectation of adult support can learn well from them.

For these children, it is worth considering whether the primary steps in a preschool program might not need to involve supportive, individualized and predictable relationships; adult models of searching, inquiring, exploratory approaches to the environment; a predictable framework of events and sequences, in the program, within which to note the new and unexpected; an encouragement of questioning and noticing in the group at large; special efforts to involve the child in vigorous and exploratory participation in experience, perhaps, in early stages, at very simple sensory-motor levels, where the child can feel his impact while learning something experientially about the properties of his environment. The concept formation and labeling material may be secondary for these children, except where it is certain that they will serve as tools for the experience of impact and mastery.

These are not unfamiliar principles, in preschool education (Biber, 1964), but they may be essential features for these children, despite the urgency of the need to improve their cognitive skills. In addition, these children may need specialized programs of individual intervention.

Certainly the data presented in this study are not definitive. It is the primary purpose of a pilot study, working with a small sample

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[36] See Minuchin, Montalvo et al. (1967).

and exploring new techniques, to generate fruitful new hypotheses and promising procedures. The data from this study have been somewhat surprising in their consistency and coherence and have been presented, thus, with some confidence. The study suggests several lines of further research, however, growing out of its pilot status and preliminary findings:

1) Further development of promising techniques (curiosity assessments, dilemma situations, mirror games) and further validation, with larger samples, of the clustering of curiosity, self-image, perception of the environment and concept formation into consistent syndromes.

2) Comparison with middle-class samples on selected aspects of assessment -- in particular, curiosity and exploratory behavior, affect differentiation, and projections in the semi-structured play of the dilemma situations.

3) Study of the connection between family background and the pattern of responses by the children -- family background to be defined not by demographic data but by thorough study of the relationships, the models and the modes of communication, guidance and affective style in the family. A possible association, in this lower-class population, between "disorganized" family environments and "high risk" development in the children has been theoretically considered in the study but not tested. This seems an important line of further research.

4) Study of the impact of different preschool programs on children who vary in the developmental characteristics studied in this project. Data concerning different preschool settings were not primary, in this project, and the range among the Centers in which preliminary and project data were collected was not great. It is the writer's impression, however, that the teacher who provided the clearest model of inquiry in her classroom and the most individualized contact with children raised the general level of exploratory behavior in her group. It would, in any event, be of theoretical and practical interest to study the impact of the various models of preschool intervention currently prevalent in the nation on such dimensions as curiosity and exploratory behavior in the children.

5) Development of specialized approaches to "high risk" children in the preschool. It seems possible that these children need individual help, if they are to develop well, even in the context of generally sensitive and effective programs. Such interventions may take varied forms: e.g., individual play sessions, geared to increasing the exploratory quality of the child's play, the differentiation of his perceptions and his expectations of effective and positive response from people. The development of effective forms of intervention, however, is a problem for research.

6) Lastly, a follow-up study of the children in this project seems indicated. Further comparative data on their progress in school and their general development over the subsequent few years would provide interesting insights into the significance of the differential patterns found among these children at the preschool stage.

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Appendix A

Instructions to Teachers for Ranking Children on Curiosity and Exploratory Behavior

Can you think of each child in your group in terms of his or her curiosity - the extent to which he explores the world around him.

I would appreciate your ranking the children of your group as best you can, using the description below as a way of thinking about them. It usually works best to think of the most exploratory and curious child first, writing the name on line 1 of the accompanying sheet, then thinking of the least exploratory and curious child, writing the name on the last line (whatever number is the total for your group). Then go back to think of the next-to-most exploratory (line 2) and the next-to-least (next to last line) etc., working your way to the middle.

Below is a description of what would be a very curious and exploratory preschool child. Perhaps no child is all of this all of the time, but use the ideas to guide you. Try not to be influenced simply by whether a child talks very well or is physically very active.

The highly curious and exploratory child:

Notices and reacts to changes and new events in the familiar setting. (Spontaneously approaches new play material; notices another turtle in the bowl, different pictures on the wall, the teacher's new sweater, the snow beginning to fall, the entrance of a new child or strange adult into the room, etc.)

Responds with interest and participation to new experiences offered to the group by the teacher. (Reacts to the events and sights of a walk down the street; is involved in the presentation of a new book or song, a new lotto game, discussion of a chart with shapes and colors, a new game, etc.)

Is exploratory in free play of his own. (Uses varied materials, manipulates and examines objects, combines things in new ways, etc.)

Asks questions and tries to find out about things from other people. (What's this? Do boats have wheels? Why does he have boots on -- it's not snowing? What's in there? etc. Note that a child who is not very verbal can indicate curiosity by very simple questions or by gesture.)

The least curious and exploratory childrer present the opposite picture: they are passive or seem to retreat from exploration; they do not seem to notice things and do not participate in new experiences; they play repetitively, passively or hardly at all; they seldom or never ask questions.

Appendix B

Point System for Object Curiosity Score
(Kaleidoscope Situation)

Maximum possible score: 18

One point credit for each numbered item below:

Initial Reaction:	1. Reacts immediately on own
Span of Involvement:	2. Spends two full minutes exploring without I's prompting (cannot be credited if #1 not credited)
Questions:	3. General questions of identification ("What is this?" etc.) 4. Other questions about object ("Can it open?" etc.)
Object Manipulation:	5. Turns object different ways 6. Turns moving part 7. Shakes object 8. Looks in object 9. Other
Spontaneous Verbalization:	10. Comments on what is seen in Kaleidoscope

Two points credit for each numbered item below:

Novelty-Seeking Behavior:	11. Turns moving part in order to produce visual change (intent must be clear) 12. Shakes object to produce visual change 13. Changes object angle to produce change (up, down, to light, etc.)
Extension of Object Use:	14. Incorporates into play; uses object in different ways (as flashlight, camera, etc.)

Appendix C

Point System for Classification Test Score

Maximum possible score: 26

Items 1-5

Sorting Behavior:

Score
0 = Piling
1 = Logical group or direct match plus piling
2 = All selections part of logical group; no extras (need not include all objects that would qualify)

Verbalization:

0 = No reason; naming of objects; "autistic" reason
1 = Attempt at reason that connects at least two items; verbal indication of a shared quality in objects

Items 6-7

Sorting Behavior:

Score
0 = Piling
1 = Match to both objects

Items 8-10

Sorting Behavior:

Score
0 = Irrelevant to category
1 = Mixed (but predominantly inappropriate)
2 = Mixed (but predominantly appropriate; orange and red mixed on #8 qualifies for this score)
3 = All selections relevant to category

Appendix D

Pattern of Curiosity and Exploration Scores by Child

Child	Observation in Preschool		Teacher Ranking[1]		Observer Ranking[1]		Object Curiosity (Kal)		Session Checklist
Center A	Rank	Low-High[2]	Rank	Low-High	Rank	Low-High	Rank	Low-High	Low-High
Yvonne[3]	8	H	1	H	5	H	11.5	L	H
Rose	18	L	10	L	10	L	18	L	L
Vera	3.5	H	3	H	3	H	3	H	L
Marie	13	L	8	L	7	L	10	L	L
Shirley	10	L	9	L	4	H	7	H	L
Larry	6	H	4	H	6	L	14.5	L	H
Carl	1.5	H	5	H	1	H	8.5	H	L
Jerry	17	L	7	L	9	L	17	L	H
Daniel	3.5	H	6	L	2	H	2	H	L
Robert	11.5	L	2	H	8	L	6	H	L
Center B									
Mary	15	L	5	L	7	L	14.5	L	H
Alice	15	L	6	L	6	L	14.5	L	L
Tara	1.5	H	4	H	1	H	1	H	H
Vicky	5	H	3	H	4	H	11.5	L	L
Jack	11.5	L	2	H	3	H	4	H	H
Mickey	15	L	8	L	8	L	14.5	L	H
Mac	7	H	1	H	2	H	5	H	H
Martin	9	H	7	L	5	L	8.5	H	H

[1]Ranks by teachers and observer are by Center. Center A: lowest rank = 10; Center B: lowest rank = 8 (all other rankings: lowest rank = 18).

[2]Placement above or below the median

[3]Pseudonyms

Appendix E

Illustrative Protocols of High and Low Coping and Resolution Ratings in Dilemma Situations (Semi-Structured Play)

Daniel: Rank 1

Family

"His mother." (Else?) "His father." (Else?) "His big brother and his sister." (Else?) "You ain't got no more?" The examiner says that we have more if he needs them for the family. He pausee and says, "A grandpa." (Else?) "A grandma." He looks at the grandmother figure and says, "She ain't flyin', only them is." He points out the fact that the arms of the others move, but that this figure has arms that are completely attached to the body.

I. Hungry

"His momma give him some food." He plays with the figures lining up the grandmother, the man, and the two boys, one behind each other. He says, "Two boys." The examiner asks him what will happen then, and he says, "He gonna eat all his food up." (Happen?) "Lemme see. His muvver gonna give him some more." He then begins to count the figures. "One, two --" and counts up through seven, eight, saying, "We got eight." (This is diligent, but not accurate.)

II. Party Fun

"The favver took him to the party." He does not manipulate the figures. The examiner asks him what happens then, and he says, "So he was glad." (Happen?) "Then the party was over and he went back home."

III. Lost

"He lost. He cry. He didn't know his way back home." He goes to look at the figure, but doesn't yet handle him. (Happen?) "So his papa, the favver, came to get him and fly back home." At this point Daniel does pick up the figures. He arranges the figures so that the father carries the boy back to the line of figures.

IV. Hit

"They was fightin'." He doesn't touch the figures but then says, "The other boy was cryin'." He takes up the first figure and says, "He beat him up." Then he brings his arm back, carries this first figure in from far off and hits the second boy over, flying at him hard with the figure that he's carrying in his hand.

Vicky: Rank 2

Family

Immediately Vicky says, "A Daddy." (Else?) "Her mother." (Else?) "Her brother." (Else?) "A baby." (Else?) "Another girl, another Daddy." (Else?) "Let me see, a baby." (Else?) "Another Daddy." The examiner then tells her that we don't have another Daddy figure and she says, "a dog."

I. Hungry

"Her going to eat her dinner." (Happen?) "Her (pointing to the woman) gonna cook her some rice, some peas, some meat, some bread, some milk." Now Vicky walks the woman and says, "Her cookin'. Her goin' to sit down." (indicating the girl) She walks the mother over to the girl. "She givin' food to her -- look!" She moves the mother's hand to the girl's mouth. "And she goin' with Daddy, he gonna take a walk to the park." The girl, the boy, and the man are now all handled. One child on each side of the man as they walk along. "Look, he got the same shoes," as she compares the boy and the man. "He goin' bye bye." She indicates the girl and the father.

II. Party Fun

"He goin' to the party and sit down." The second male figure goes with the girl. The two walk off the table to the other desk and continue walking. "Her Daddy." (What are they doing now?) "He still seein' it. He says no." (What do you mean?) "No. He don't take her to the party." She walks the two back. "He goin' to the store." Then Vicky says in the tone of an adult talking to a child, "You stay here and play. Look!" Vicky now has the two figures on a chair near the table. The girl and the father are then walked all around, up the chair arms, across the chair back, down the rungs of the chair and she says several times, "Look, look," and shows me how she walks them.

III. Lost

"Couldn't find her sister." (Happen?) "Cause she was in the ..." (names actual neighbors) "Cause she's scared of the ghost." (Happen?) "She can find her sister." She picks the second girl up and takes her directly over and she has the two girls now close, face to face. (Doing?) "They kissin'." She lays down the two girls together and says, "Them asleep." She repeats this a couple of times. Now she picks up the male and female and she says, "He goin' right in the church. He goin' bye-bye." She walks the two figures across the table.

IV. Hit

"Gonna hurt her back." She has the two girls fight. The first knocks down the second. "He hit her. That's all." She puts the two down.

Carl: Rank 4.5

Family

"Not me." (Who?) "You no got another boy to be his friend?" (Yes.) "Well, gimme it." Examiner brings out another boy figure. "Got another?" As Carl accepts this next boy, he bends the feet slightly saying he's moving the feet so that he can walk better. (Else?) Charles points to the two boys and says, "Him and him." (Else?) Charles ignores this and plays with these figures, putting one on top of the other's head, and shows them doing acrobatics so that he's got three of them standing one on top of the other. The examiner asks whether he would like a mommy in the family. "Yeah. Where's the daddy? Where the grandpa and the grandma?" He is given these figures and then he looks at the two men, compares them, and says, "He look like him," and then he says, "The grandpa have a mustache."

I. Hungry

"Back." (What do you mean?) "Sit down and wait for the food to get done." (And then?) "Eat it!"

II. Party Fun

"No." (What happens?) "His mudder said no. That's what my mommy said." Carl did not manipulate the figures during this interchange.

III. Lost

"The police gotta come." (And then?) "Phone number, address, his name, his mudder's name, his fadder's name, his grandmother's name, and his grandpa's name." (Happen?) "He don't know where his house at. 567 -- that's where he lives. I know where he lives. He just go round the corner." Now Carl reaches for the figure and moves it vigorously. "He come back home! That's what he did!" He returns the figure to the group very definitely and very vigorously. "I no get lost. I stay with my mudder and my fadder."

IV. Hit

Carl, during this situation, manipulates the figures vigorously. He begins by picking up the third boy and hitting hard at the first. He says, "Bangs him down." (Who?) "My boy." Carl lets out a big laugh. "I banged this one and this one, both of them." He bangs the figures vigorously and goodnaturedly and says something about the "police." (Happen?) "His fadder coming now." He brings the father figure over and jumps on the other two boys. "His fadder jumping on 'em. His mudder coming." He has the mother jump on all three boys. "Here come the grandmudder. They all daid 'cause they jumpin' so fast. He not daid and he not daid." Carl here has indicated the two grown men who were the only ones who were not dead. "He jumped on the grandmudder and her." He moves them all in a big jumping scene, the two men jumping on all the others, and then finally lays them all on the ground.

Rose: Rank 16

Family

There's no response after repeated questions. Examiner asks if she would like a mommy in the family. Rose nods yes. Examiner asks whether she would like anybody else. "A daddy." (Else?) "Two sisters." (Else?) "A baby." (Else?) Rose nods and says, "Two babies." (Else?) Rose says, "Nobody else."

I. Hungry

Though the situation is repeated several times and in a variety of ways, there is no answer. Rose makes no move.

II. Party Fun

"Her daddy." Rose does not touch the figures and does not respond to any questions about what happens next.

III. Lost

"Her gonna die." Rose does not develop this any further, in spite of questions.

IV. Hit

She says something which examiner can't catch, in a very low voice.

The examiner asks if the figure will hit her. Rose shakes her head no. The examiner asks if she will cry, and she shakes her head yes. The examiner asks what she will do, and she says, "Her gonna cry." After a pause, Rose picks up the baby, which is her first physical contact with any of these figures. She starts to move its arms a bit and then puts it down.

The examiner repeated the first situation about hungry, but Rose said, "I don't know."

Marie: Rank 16

Family

"Me and Jane." Examiner asks who Jane is and she says, "In there," meaning the Jane who is in her class. The examiner asks again who should be in her family and Marie says, "Her," indicating the self figure. (Else?) "Her," indicating the other figure. The examiner asks again about a family and Marie points to the other child. Then she says, "That's me," pointing to the first figure and, "That's Jane," pointing to the other. The examiner asks if she wants a mommy in the family, and she says "Amy." "Her mommy." (Else?) She nods and points to the same woman.

I. Hungry

"If you go outside, you get hungry." (Happen?) "I don't know." (You make it up.) "Her mommy said no." "You got a daddy of her?" The examiner then gives her a male figure.

II. Party Fun

When the situation is presented, Marie shyly touched the other girl and looked at examiner. (Happen?) "Her want to take her to the party." "You got a monster dere?" The examiner says no, we don't have a monster. Marie then inspects the male figure and says, "Why his face all dirty?" (What happens?) "Got a great, great big bag potato chips." She opens her arms wide as she tells this.

III. Lost

"A monster will get her...and he gonna bring her back." (Who will bring

her back?) "Monster...on the TV."

IV. Hit

"A monster hit her." She touches lightly the first figure and then she touches the second one. (The examiner has asked which one is the monster.) She whispers, about the second one, "Dis de monster." "Her the monster."

After a bit, Marie picks up the first girl and wordlessly hits the second over and over. She holds the second in her hand and beats repeatedly with the whole body of the first. Now the second one is on the floor and the first one bangs down on her. The man bangs the woman and then they are placed face to face. The examiner asks what she's doing and she whispers, "Kissin'." She has the two girls kiss. The man and woman are brought face to face. The two girls are brought behind each of the male and female figures and they knock over the man and the woman. They bang on the lady. Marie says, "I don't like her. I want Amy."

Mary: Rank 16

Family

"A boy." (Else?) "The mudder." (Else?) "The Daddy." (Else?) "The fadder." (Else?) "Sisters and brothers." (Else?) "Big sister and a little boy. Not this little boy...a big boy." At the end of this she has a family of two males, a female, two girls, two boys, and a baby. Later she adds more mothers.

I. Hungry

"Her hungry." She walks the figure and then says, "And this girl hungry," indicating the other girl. "And this boy, hungry," She walks the other two figures. "He biggest." "And this one hungry too. And all the mudders hungry. Where da udder maddah?" The examiner asks several times what happens, and she says each time, "they hungie."

II. Party Fun

"Her wanta take her to da party." She puts the figure near the mother figure and lines up several figures. She says, "Her hungie, and her is hungie, I want two mothers. I want four mothers." The examiner asks

again about the party and she says, "De party is gone. My party is over."

III. Lost

"Her no know where her is." (Happen?) "Her don't know where her at." (What will happen?) Mary shrugs and says, "I don't know."

IV. Hit

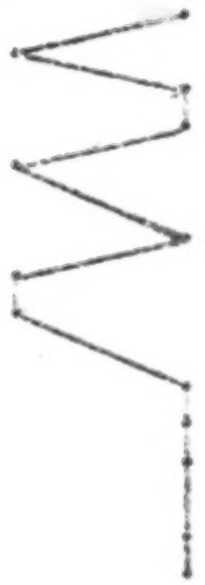
"Her wanna hit her?" She bangs the first figure with the second girl and says "I gonna...." She bangs and laughs. Then she puts them together face to face. (What are they doing?) "They kissin'."

Appendix F

Illustrative Profiles of Rankings and Median Placements on All Study Dimensions

Daniel

	Rank		Median Placement (Low — High)
Preschool obs.	3.5		
Teacher rank	6	(of 10)	
Obs. rank	2	(of 10)	
Obj. curiosity	2		
Checklist			
D-I Score	6		
Affect Diff.		Score: 2	
Diff. body parts		Score: 2	
Coping-Resol.	1		
Percep. Ad.			
No. del. resol.			
Obj. Comp.	4		
Classif.	9		
Matrix		(not given)	



Mickey

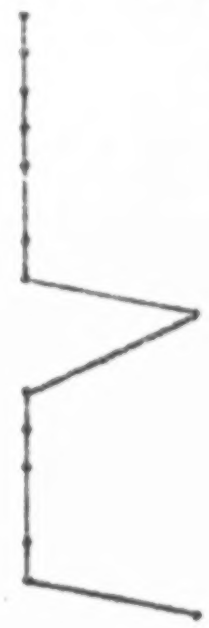
	Rank		Median Placement (Low — High)
Preschool obs.	15		
Teacher rank	8	(of 8)	
Obs. rank	8	(of 8)	
Obj. curiosity	14.5		
Checklist			
D-I Score	15		
Affect diff.		Score: 0	
Diff. body parts		Score: 2	
Coping-Resol.	16	(annotated for agg. & sex)	
Percep. Ad.			
No. del. resol.			
Object Comp.	18		
Classif.	12.5		
Matrix	6	(of 16)	

Rose

	Rank		Median Placement Low High
Preschool obs.	18		
Teacher rank	10	(of 10)	
Obs. rank	10	(of 10)	
Obj. curiosity	18		
Checklist			
D-I Score	7		
Affect Diff.		Score: 0	
Diff. body parts		Score: 1	
Coping-Resol.	16		
Percep. Ad.			
No. del. resol.			
Object Comp.	15		
Classif.	15		
Matrix	9	(of 16)	

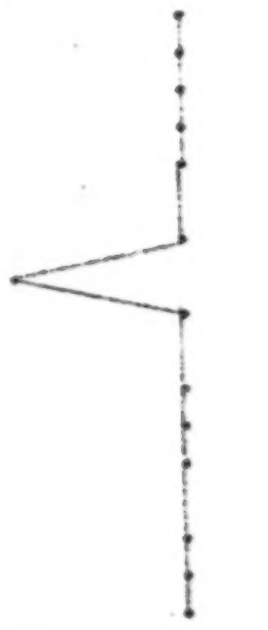
Marie

	Rank		Median Placement Low High
Preschool obs.	13		
Teacher rank	8	(of 10)	
Obs. rank	7	(of 10)	
Obj. curiosity	10		
Checklist			
D-I Score	15		
Affect diff.		Score: 1	
Diff. body parts		Score: 3	
Coping-Resol.	16	(annotated for agg. & sex)	
Percep. Ad.			
No. del. resol.			
Object Comp.	15.5		
Classif.	12.5		
Matrix	5	(of 16)	



Tara

	Rank		Median Placement (Low — High)
Preschool obs.	1.5		
Teacher rank	4	(of 8)	
Obs. rank	1	(of 8)	
Obj. curiosity	1		
Checklist			
D-I Score	9		
Affect Diff.		Score: 0	
Diff. body parts		Score: 3	
Coping-Resol.	8		
Percep. Ad.			
No. del. resol.			
Object Comp.	4		
Classif.	1.5		
Matrix	2	(of 16)	



Carl

	Rank		Median Placement (Low — High)
Preschool obs.	1.5		
Teacher rank	5		
Obs. rank	1	(of 10)	
Obj. curiosity	8.5		
Checklist			
D-I Score	4		
Affect Diff.		Score: 4 } all	
Diff. body parts		Score: 5 }	
Coping-Resol.	4.5	(annotated for	
Percep. Ad.		aggression)	
No. del. resol.			
Object Comp.	7		
Classif.	4.5		
Matrix	1	(of 16)	

Processes of Curiosity and
Exploration in Preschool
Disadvantaged Children
OEO Contract No. 2403

Patricia Minuchin
Bank Street College of Education
Research Division

Abstract of Final Report

This pilot project had two primary objectives: to develop ways of systematically describing variations in expressed curiosity and constructive exploration among preschool disadvantaged children, and to assess the relationship between the extent of such spontaneous exploration and other aspects of the child's dynamic and cognitive development. In connection with the second objective, it was predicted that children with more constructive exploratory behavior would be characterized by a more integrated, differentiated self-image; greater expectations of support, coherence and facilitation from the human and physical environment; and greater conceptual mastery.

The study was conducted in two classes in urban preschool centers for disadvantaged children. The subjects were 18 four year old Negro children, newly entered in the Head Start ("Get Set") program. There were three sources of data: observations in the preschool setting; teacher rankings; four individual sessions with the children.

Measures of curiosity and exploration were obtained from: observations of the group in new situations arising as part of the preschool program; teacher rankings; responses to a new object in a controlled situation (object curiosity); checklist of session behavior. Measures of self-image were obtained from drawings and mirror games. Perceptions of adults and the environment were obtained from semi-structured play (dilemma situations with family figures). Concept formation measures were obtained from three classification and categorization situations, differing in the nature and concreteness of materials.

It proved possible to assess exploratory behavior in several ways. The measures of curiosity and exploration tended to confirm each other and to suggest a consistent pattern of reaction on the part of the children. This pattern was reliably related to the nature of self-image, the child's perceptions and expectations of the environment and his level of conceptual mastery -- more active exploration being related to more coherent and positive images and more adequate concept formation.

The study pointed to what may be termed a "developmental high risk" group within the preschool disadvantaged population. The data suggested that children who showed little curiosity or constructive exploratory behavior were also children whose image of themselves was diffuse, who projected an environment characterized by sustained crisis, little coherence and ineffective, poorly

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defined adults, and whose conceptual grasp of order and relationships in the physical environment was comparatively poor. Children such as these may require a preschool experience stressing psychological coherence and interpersonal contact more than specific skills and training.

The study suggested several lines of further research, including assessment of the possible relationship between "disorganized" family environments and "high risk" development in the children and evaluation of the impact of different preschool models on the growth maintenance of exploratory behavior, as well as further validation of the findings and comparison with middle-class preschool children on the dimensions studied in the project.